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IN THE CLAIMS

Applicant has submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please amend pending claims 1, 2, 5, 8, 13, 14, and 15 as noted below.

1. (Currently amended) A method of synthesizing a reverse model of a control system comprising:-

transforming a transition function of <u>a state machine model of</u> the control system into a constraint on the reverse model, <u>wherein the reverse model is a reverse model of the state</u> <u>machine model</u>; and

applying a parameterization of said constraint to all transitions of the reverse model.

2. (Currently amended) A method of synthesizing a reverse model of an electronic circuit, the method comprising:

transforming a transition function of <u>a state machine model of</u> said electronic circuit into a constraint on the reverse model, <u>wherein the reverse model is a reverse model of the state machine model</u>; and

applying a parameterization of said constraint to all transitions of the reverse model.

- 3. (Original) The method as claimed in claim 2 wherein said electronic circuit includes a logic circuits.
- 4. (Original) The method as claimed in claim 2 wherein said electronic circuit includes a microprocessor.
- 5. (Currently amended) A method of calculating <u>a</u> the post-image in a control system, the method comprising:

forming a reverse model of said control system, wherein the reverse model is a reverse model of a state machine model of the control system; and 749569.3



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calculating <u>a</u> the pre-image in said reverse model, wherein the pre-image in said reverse model is equivalent to the post-image in said control system.

- 6. (Original) The method of claim 5 further comprising identifying from a characterization of a model of said control system, transitions of said control system and reversing said transitions to form potential transitions of a reverse model.
- 7. (Original) The method of claim 5 and further comprising extracting from a characterization of a model of said control system, transition functions of said control system.
- 8. (Currently amended) A method of calculating <u>a</u> the post-image in an electronic circuit, the method comprising:

forming a reverse model of said electronic circuit, wherein the reverse model is a reverse model of a state machine model of the electronic circuit; and

calculating <u>a</u> the pre-image in said reverse model, wherein the pre-image in said reverse model is equivalent to the post-image in said electronic circuit.

- 9. (Original) The method as claimed in claim 8 wherein said electronic circuit includes a logic circuits.
- 10. (Original) The method as claimed in claim 8 wherein said electronic circuit includes a microprocessor.
- 11. (Original) The method of claim 8 further comprising identifying from a characterization of a model of said electronic circuit, transitions of said electronic circuit and reversing said transitions to form potential transitions of a reverse model.



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12. (Original) The method of claim 8 and further comprising extracting from a characterization of a model of said electronic circuit, transition functions of said electronic circuit.

13. (Currently amended) A device for synthesizing a reverse model of an electronic circuit, the device comprising:

a first store storing bits representative of transition functions of <u>a state machine model</u> of said electronic circuit;

a second store storing bits representative of an estimate of transition functions of said reverse model; and

a processing system comprising

a logical device for transforming said transition functions of <u>the state machine</u> model of said electronic circuit into constraints on said reverse model, wherein the reverse model is a reverse model of the state machine model; and

a parameterization processor for applying a parameterization of said constraints to said estimate of transition functions of said reverse <u>model</u> system to form transition functions of said reverse model.

14. (Currently amended) A device for calculating <u>a</u> the post-image in an electronic circuit comprising:

a third store storing bits representative of transition functions of a reverse model of said electronic circuit;

a fourth store storing bits representative of a set of states of <u>a state machine model of</u> said electronic circuit; and

a forming device substituting the state variables of the reverse model by the transition functions of the reverse model to provide a new set of states representing the pre-image of said reverse model, and thus provide the post-image in said electronic circuit.

15. (Currently amended) A device as claimed in claim 14 further comprising a first store storing bits representative of transition functions of said electronic circuit;



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a second store storing bits representative of an estimate of transition functions of said reverse model;

a logical device for transforming said transition functions of said electronic circuit into constraints on said reverse models; and

a parameterization processor for applying a parameterization of said constraints to said estimate of transition functions of the reverse <u>model</u> system to form transition functions of said reverse model.

- 16. (Original) A device as claimed in claim 13 wherein said estimate of transition functions of said reverse model comprises previous state variables of said electronic circuit.
- 17. (Original) A device as claimed in claim 15 wherein said estimate of transition functions of said reverse model comprises previous state variables of said electronic circuit.
- 18. (Original) The device as claimed in claim 13 wherein said electronic circuit includes a logic circuits.
- 19. (Original) The device as claimed in claim 13 wherein said electronic circuit includes a microprocessor.
- 20. (Original) The device as claimed in claim 14 wherein said electronic circuit includes a logic circuits.
- 21. (Original) The device as claimed in claim 14 wherein said electronic circuit includes a microprocessor.